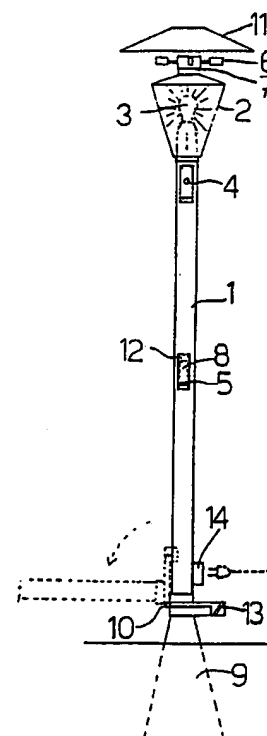




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>5</sup> :</b> <b>F21M 5/04, F21S 9/04</b> <b>F21V 33/00</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 93/13355</b> <b>(43) International Publication Date:</b> 8 July 1993 (08.07.93)
<b>(21) International Application Number:</b> PCT/FI93/00003 <b>(22) International Filing Date:</b> 4 January 1993 (04.01.93)  <b>(30) Priority data:</b> U920023                      2 January 1992 (02.01.92)                      FI  <b>(71)(72) Applicant and Inventor:</b> MOILANEN, Markku [FI/FI]; Kaivokuja 2, SF-05400 Jokela (FI).  <b>(74) Agent:</b> PAPULA REIN LAHTELA OY; Box 981, Salom- onkatu 17B, SF-00100 Helsinki (FI).  <b>(81) Designated States:</b> AU, CA, HU, JP, KR, NO, RU, US, Eu- ropean patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).		<b>Published</b> <i>With international search report.</i> <i>In English translation (filed in Finnish).</i>
<b>(54) Title:</b> POST LAMP  <b>(57) Abstract</b> <p>An outdoor lighting fixture, comprising a lighting fixture pillar (1) anchored in the ground; a light hood (2) mounted on the top end of the pillar; a lamp (3) located inside said light hood; and a light-sensitive pick-up (4) for controlling the lamp to operate in conformity with ambient lighting conditions and/or a circuit breaker (5) for manually switching the lamp on or off. The outdoor lighting fixture comprises a wind rotor (6) disposed on the top end of the pillar to be rotatable by wind power; a generator (7) disposed to be driven by the wind rotor; and a storage battery (8) disposed to be chargeable with electricity produced by the generator; and that the lamp (3) is arranged to derive its operating current from the storage battery and/or directly from the generator.</p>		



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## POST LAMP.

The present invention concerns an outdoor lighting fixture as defined in the preamble to Claim 1.

5 In the art are previously known such outdoor lighting fixtures, intended to be used in lighting road and courtyard areas, which comprise a light fixture pillar, or post, anchored in the ground. On the end of the pillar a light hood is mounted, and the lamp is  
10 located inside the light hood. The light fixture further comprises a photosensitive pick-up for controlling the lamp so as to function in conformity with ambient lighting conditions. A light fixture of this type draws its electric current from the general electricity dis-  
15 tribution network, most often through electric cables buried in the ground.

The problem with outdoor lighting fixtures of prior art is that they cannot be employed when electricity is not available at reasonable cost. As a consequence, many objects where lighting would be required  
20 are left unlighted.

The object of the invention is to eliminate the drawback mentioned above.

It is a particular object of the invention to  
25 disclose an outdoor lighting fixture which can be installed with ease and in a simple way virtually anywhere and which can operate apart from the general distribution network.

The outdoor lighting fixture of the invention  
30 is characterized by that which is stated in Claim 1.

The outdoor lighting fixture of the invention comprises a lighting fixture pillar anchored to the ground; a light hood mounted on the top end of the pillar; a lamp, located inside said light hood; and a  
35 light-sensitive pick-up, for controlling the lamp to operate in conformity with ambient lighting conditions, or an electric switch for switching the lamp manually

on and off.

As taught by the invention, the outdoor lighting fixture comprises a wind rotor disposed on the top end of the pillar to be rotatable by wind power; a generator arranged to be driven by said wind rotor; and a storage battery arranged to be charged with electric current produced by said generator; and the lamp has been arranged to derive its operating current from the storage battery and/or the generator.

10 In an embodiment of the outdoor lighting fixture the storage battery is installed inside the lighting fixture pillar.

In an embodiment of the outdoor lighting fixture the storage battery is disposed outside the lighting fixture pillar.

15 In an embodiment of the outdoor lighting fixture the outdoor lighting fixture comprises an electric outlet for taking off electric current for external electric appliances.

20 The advantage of the invention is that the outdoor lighting fixture can be mounted anywhere and it can operate independently apart from the general electricity network.

Furthermore, thanks to the invention, the work of installing the outdoor lighting fixture is simple and requires no major excavation nor power line work.

In the following the invention is described in detail with reference to the attached drawing, wherein

Fig. 1 presents an embodiment of the outdoor lighting fixture of the invention, in elevational view,

Fig. 2 presents a detail of another embodiment of the outdoor lighting fixture of the invention, and

Fig. 3 presents a detail of a third embodiment of the outdoor lighting fixture of the invention.

35 In Fig. 1 is seen an outdoor lighting fixture comprising a lighting fixture pillar 1 fashioned of plastic material, and which is advantageously anchored

in the ground by means of a heavy concrete foot 9. The lighting fixture pillar 1 is in its lower part pivoted with a lockable pivot 10 to the concrete foot 9, which in its turn is sunk in the ground, thus offering firm anchorage to the outdoor lighting fixture. On the top end of the pillar 1 is provided a light hood 2, and the lamp 3 is located inside the light hood 2. The lighting fixture further comprises a light-sensitive pick-up 4 serving as twilight switch by which the lamp 3 is controlled to operate, and switched off, in conformity with ambient lighting conditions. The lighting fixture 1 also comprises a manual operating switch 5, by means of which the lamp 3 can be switched on, and off, manually as well.

The outdoor lighting fixture comprises a wind rotor 6, located on the top end of the pillar 1 above the light hood 2, between this hood and a shade 11. The shade 11 on the top of the lighting fixture 1, above the wind rotor 6, is used to direct the light from the lamp 3 in orthodox manner so as to achieve efficient lighting of the area that should be lighted. The wind rotor 6 rotates by effect of the wind in a horizontal plane about its vertical axis of rotation and drives the generator 7, which produces an electric current. The storage battery 8 has been installed inside the lighting fixture pillar 1, and it is charged with the electricity produced by the generator 7. The lamp 3 receives its operating current from the storage battery 8. The power rating of the lamp 3 may in some instances be e.g. 5 to 10 watts. The voltage in the electrical system is e.g. 6 or 12 volts; the lighting fixture is therefore safe and requires no high output generator to produce the current. The storage battery 8 is enclosed in the lighting fixture pillar 1 and can be removed from there through a hatch covered with a lockable cover 12. The lighting fixture's light-weight construction and low operating voltage are conducive to its

safety in traffic, even when it is involved in a collision.

When the locking member 13 of the pivot 10 is taken out, the pillar can be tilted from the vertical position e.g. into a horizontal plane, as indicated with interrupted lines in the figure, and changing the lamp 4, as well as any other servicing, will be easy to carry out.

In the lower part of the lighting fixture pillar 1 is furthermore provided an electric outlet 14 for taking off electric current from the storage battery 8 and/or directly from the generator 7 for driving external electrical appliances with electricity generated by the generator 7. It is thus understood that the outdoor lighting fixture also serves as a wind power plant producing electricity which can be consumed in a variety of objects.

Fig. 2 illustrates a light outdoor lighting fixture which is lightly anchorable to the ground and of which e.g. the lower end (not depicted) of its pillar 1 is for instance pushed into the ground or braced in another, readily detachable way against the ground. The outdoor lighting fixture may be portable, and it can be used e.g. as a piece of personal travelling appliance on camping grounds, etc. In the embodiment of the figure, the wind rotor 6 and generator 7 have been placed topmost upon the shade 11.

Fig. 3 presents an outdoor lighting fixture sturdier than the foregoing, meant to be permanently mounted on the ground for use in likeness with that of a road lighting fixture. In this embodiment the wind rotor 6 is located directly on the top end of the lighting fixture pillar 1, while the light hood 2 and lamp 3 are mounted on a branch member 13, extending to one side of the upright pillar 1.

The invention is not confined to concern merely the embodiment example presented in the foregoing:

numerous modifications are feasible within the scope of the inventive idea defined by the claims.

## CLAIMS

1. An outdoor lighting fixture, comprising a lighting fixture pillar (1) anchored in the ground; a light hood (2) mounted on the top end of the pillar; a lamp (3) located inside said light hood; and a light-sensitive pick-up (4) for controlling the lamp to operate in conformity with ambient lighting conditions and/or a circuit breaker (5) for manually switching the lamp on or off, characterized in that the outdoor lighting fixture comprises a wind rotor (6) disposed on the top end of the pillar to be rotatable by wind power; a generator (7) disposed to be driven by the wind rotor; and a storage battery (8) disposed to be chargeable with electricity produced by the generator; and that the lamp (3) is arranged to derive its operating current from the storage battery and/or directly from the generator.
2. Outdoor lighting fixture according to claim 1, characterized in that the storage battery (8) is installed inside the lighting fixture pillar (1).
3. Outdoor lighting fixture according to claim 1 or 2, characterized in that the storage battery is disposed outside the lighting fixture pillar (1).
4. Outdoor lighting fixture according to any one of claims 1-3, characterized in that the outdoor lighting fixture comprises an electric outlet (14) for taking off electricity for external electrical appliances.



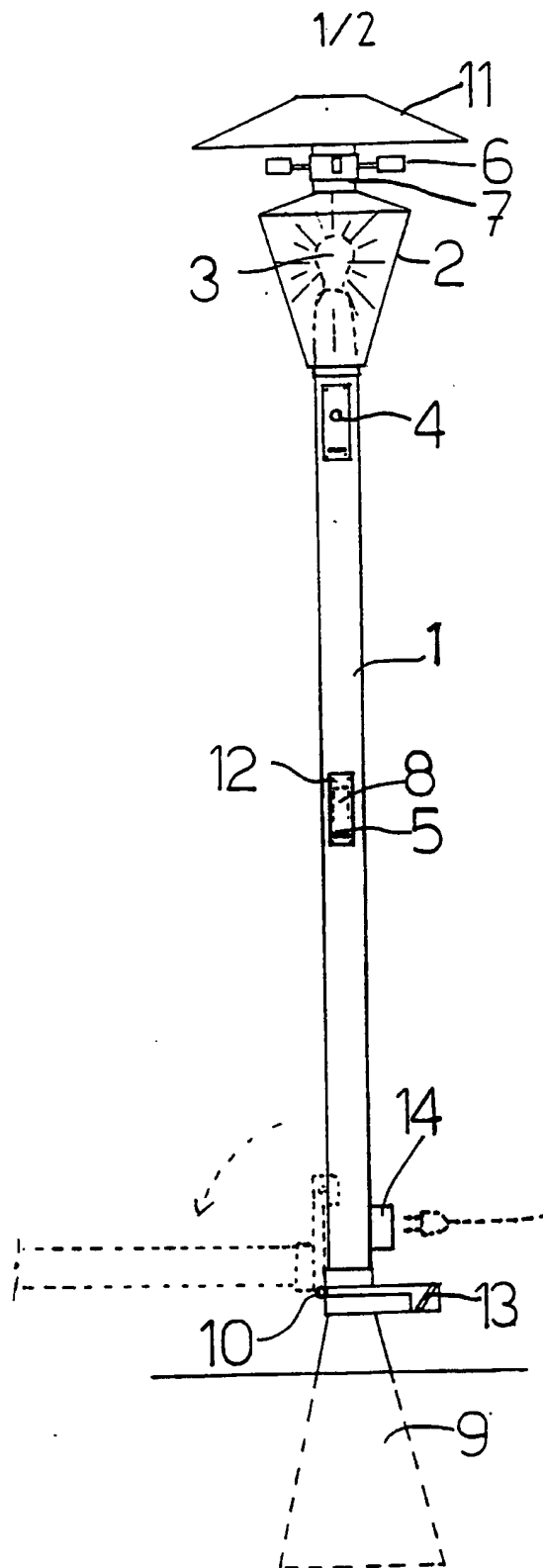


Fig1

2/2

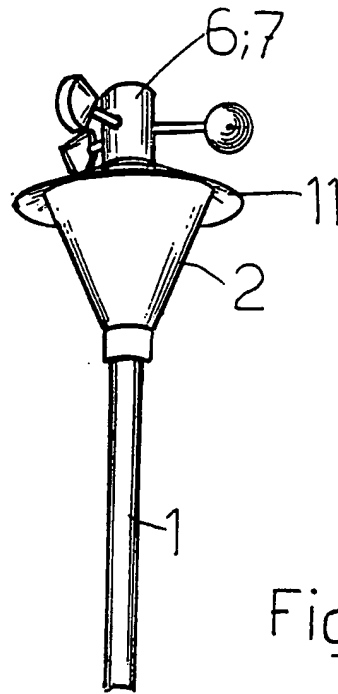


Fig2

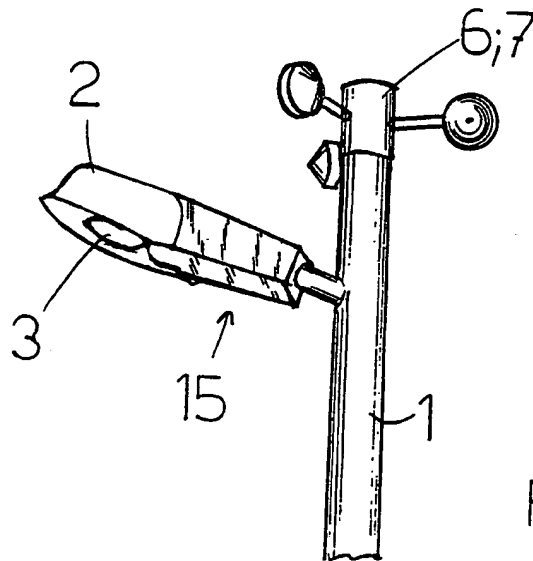


Fig3

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 93/00003

## A. CLASSIFICATION OF SUBJECT MATTER

IPC5: F21M 5/04, F21S 9/04, F21V 33/00  
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Minimum documentation searched (classification system followed by classification symbols)

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO, A1, 8103215 (DOAN, DUC), 12 November 1981 (12.11.81), page 2, line 28 - line 36; page 3, line 4 - line 5; page 4, line 14 - line 21, page 4, line 32 - line 36; claims 2-3	1-2
Y	--	3-4
P,X	GB, A, 2246173 (B.W. TEMPLE), 22 January 1992 (22.01.92), page 4, line 1 - line 43, figures 5-7	1-2
P,Y	--	3-4
Y	FR, A1, 2473641 (SAEZ, J.), 17 July 1981 (17.07.81), page 1, line 16 - line 31, figure 1	3
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☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 3215831 (D. GLADSDEN ET AL), 2 November 1965 (02.11.65), page 1, column 1, line 26 - line 32, figures 1-2  --	4
A	CH, C, 97954 (J. ROHACEK), 16 February 1923 (16.02.23), page 2, column 1, line 48 - column 2, line 7, figure 5  -- -----	1-4

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

26/02/93

International application No.  
**PCT/FI 93/00003**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A1- 8103215	12/11/81	EP-A- 0050623	05/05/82
GB-A- 2246173	22/01/92	NONE	
FR-A1- 2473641	17/07/81	NONE	
US-A- 3215831	02/11/65	NONE	
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